

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT****(Under 37 CFR 1.97(b) or 1.97(c))**Docket No.  
**13919 (NECI 1093)**In Re Application Of: **David W. Jacobs, et al.**Serial No.  
**09/705,507**Filing Date  
**November 3, 2000**Examiner  
**Unassigned**Group Art Unit  
**2623**Title: **LAMBERTIAN REFLECTANCE AND LINEAR SUBSPACES**Address to:  
**Assistant Commissioner for Patents  
Washington, D.C. 20231****RECEIVED****MAY 15 2001****37 CFR 1.97(b)****Technology Center 2600**

1. ☒ The Information Disclosure Statement submitted herewith is being filed within three months of the filing of a national application; within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or before the mailing date of a first Office Action on the merits, whichever event occurs last.

**37 CFR 1.97(c)**

2. ☐ The Information Disclosure Statement submitted herewith is being filed after three months of the filing of a national application, or the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or after the mailing date of a first Office Action on the merits, whichever occurred last but before the mailing date of either:

1. a Final Action under 37 CFR 1.113, or
  2. a Notice of Allowance under 37 CFR 1.311,
- whichever occurs first.

Also submitted herewith is:

- ☐ a certification as specified in 37 CFR 1.97(e);

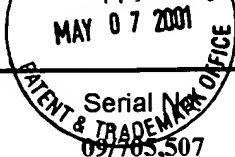
**OR**

- ☐ the fee set forth in 37 CFR 1.17(p) for submission of an Information Disclosure Statement under 37 CFR 1.97(c).

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT**  
(Under 37 CFR 1.97(b) or 1.97(c))

Docket No.  
13919 (NECI 1093)

In Re Application Of: David W. Jacobs, et al.



Serial No.  
097705,507

Filing Date  
November 3, 2000

Examiner  
Unassigned

Group Art Unit  
2623

Title: LAMBERTIAN REFLECTANCE AND LINEAR SUBSPACES

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MAY 15 2001

**Payment of Fee**

(Only complete if Applicant elects to pay the fee set forth in 37 CFR 1.170) Technology Center 2600

- ☐ A check in the amount of \_\_\_\_\_ is attached.
- ☒ The Assistant Commissioner is hereby authorized to charge and credit Deposit Account No. 19-1013/SSMP as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of \_\_\_\_\_
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Mishelle Mustafa

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Signature

Dated: May 4, 2001

Thomas Spinelli  
Registration No.: 39,533

Scully, Scott, Murphy & Presser  
400 Garden City Plaza  
Garden City, New York 11530  
(516) 742-4343

cc:



PATENTS

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Applicant(s):** David W. Jacobs, et al.      **Examiner:** Unassigned  
**Serial No:** 09/705,507      **Art Unit:** 2623  
**Filed:** November 3, 2000      **Docket:** 13919 (NECI 1093)  
**For:** LAMBERTIAN REFLECTANCE AND LINEAR SUBSPACES      **Dated:** May 4, 2001

Assistant Commissioner for Patents  
United States Patent and Trademark Office  
Washington, D.C. 20231

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MAY 15 2001

**INFORMATION DISCLOSURE STATEMENT** Technology Center 2600

Sir:

In accordance with 37 C.F.R. §§ 1.97 and 1.98, it is requested that the following references, which are also listed on the attached Form PTO-1449, be made of record in the above-identified case.

1. P.N. Belhumeur et al., "What is the Set of Images of an Object Under All Possible Lighting Conditions?", Proceedings of the Computer Vision and Pattern Recognition Conference, pp. 270-277, 1996;
2. P.N. Belhumeur et al., "The Bas-Relief Ambiguity", International Journal of Computer Vision, Vol. 35, No. 1, pp 33-44, 1999;
3. B. Cabral et al., "Bidirectional Reflection Functions from Surface Bump Maps", Computer Graphics, Vol. 21, No. 4, pp. 273-281, 1987;
4. T.F. Cootes et al., "Training Models of Shape from Sets of Examples", Proceedings of the British Machine Vision Conference, pp. 9-18, 1992;

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**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8(a)**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on May 4, 2001.

Dated: May 4, 2001

  
Mishelle Mustafa

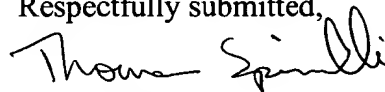
5. M. D'Zmura, "Shading Ambiguity: Reflectance and Illumination", Computational Models of Visual Processing, Landy, M. and Movshon, J. (eds.), pp. 187-207, 1991;
6. A.S. Georgiades et al., "Illumination Cones for Recognition Under Variable Lighting: Faces", Proceedings of the Computer Vision and Pattern Recognition Conference, pp. 52-58, 1998;
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8. H. Groemer, Geometric Applications of Fourier Series and Spherical Harmonics, Cambridge University Press, 1996;
9. G.H. Golub et al., Matrix Computations, John Hopkins University Press, 1989;
10. P.W. Hallinan, "A Low-Dimensional Representation of Human Faces For Arbitrary Lighting Conditions", Proceedings of the Computer Vision and Pattern Recognition Conference, pp. 995-999, 1994;
11. H. Hayakawa, "Photometric stereo under a light source with arbitrary motion", Journal of the Optical Society of America, Vol. 11, No. 11, pp. 3079-3089, 1994;
12. B.K.P. Horn, Robot Vision, MIT Press, 1986;
13. D.W. Jacobs et al., "Comparing Images Under Variable Illumination", NECI TR#97-183, 1997;
14. M. Kirby et al., "Application of the Karhunen-Loève Procedure for the Characterization of Human Faces", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 12, No. 1, pp. 103-108, 1990;
15. J.J. Koenderink et al., "Bidirectional Reflection Distribution Function expressed in terms of surface scattering modes", Proceedings of the 4<sup>th</sup> European Conference on Computer Vision, Vol. 2, pp. 28-39, 1996;
16. J. J. Koenderink et al., "The Generic Bilinear Calibration-Estimation Problem", International Journal of Computer Vision, Vol. 23, No. 3, pp. 217-234, 1997;
17. Y. Moses, Face Recognition: Generalization to Novel Images, Ph.D. Thesis, Weizmann Institute of Science, Israel, 1993;

18. H. Murase et al., "Visual Learning and Recognition of 3-D Objects from Appearance", International Journal of Computer Vision, Vol. 14, No. 1, pp. 5-24, 1995;
19. A. Shashua, "On Photometric Issues in 3D Visual Recognition from a Single 2D Image", International Journal of Computer Vision, Vol. 21, No. 1/2, pp. 99-122, 1997;
20. K.E. Torrance et al., "Theory for Off-Specular Reflection From Roughened Surfaces", Journal of the Optical Society of America, Vol. 57, No. 9, pp. 1105-1114, 1967;
21. M. Turk et al., "Eigenfaces for Recognition", Journal of Cognitive Neuroscience, Vol. 3, No. 1, pp. 71-86, 1991;
22. S. Ullman et al., "Recognition by Linear Combinations of Models", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 13, No. 10, pp. 992-1006, 1991;
23. S.H. Westin et al., "Predicting Reflectance Functions from Complex Surfaces", Computer Graphics, Vol. 26, No. 2, pp. 255-264, 1992; and
24. A.L. Yuille et al., "Determining Generative Models of Objects Under Varying Illumination: Shape and Albedo from Multiple Images Using SVD and Integrability", International Journal of Computer Vision, Vol. 35, No. 3, pp. 203-222, 1999.

Applicants are submitting copies of the above-cited references.

Inasmuch as this Information Disclosure Statement is being submitted in accordance with the schedule set out in 37 C.F.R. § 1.97(b), no statement or fee is required.

Respectfully submitted,



Thomas Spinelli

Registration No.: 39,533

Scully, Scott, Murphy & Presser  
400 Garden City Plaza  
Garden City, New York 11530  
(516) 742-4343

TS:cm